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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/353,460	07/13/1999	JIUNN-TSAIR CHEN	5-8-3	3576

22046 7590 11/17/2003

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EXAMINER

HOANG, THAI D

ART UNIT	PAPER NUMBER
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2667

10

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/353,460

Applicant(s)

CHEN, JIUNN-TSAIR

Examiner

Thai D Hoang

Art Unit

2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2, 9-11, 18-19, 26-29, 36-39, and 46-47 are rejected under 35 U.S.C. 102(a) as being unpatentable over Dent, US Patent No 5,831,977.

Regarding claims 1, 11, 18, 28 and 38, Dent discloses a Subtractive CDMA system with simultaneous subtraction in code space and direction-of-arrival space. Dent discloses the system comprises a plurality of mobile phones, which transmit coded signals to at least one base station. The base station is equipped with an antenna array for receiving signals from a plurality of mobile stations lying in different directions. An processor arranges samples received sequentially in time from different antenna elements in a two-dimensional array, one dimension corresponding to the different antenna elements (direction of arrival) and the other dimension corresponding to time (time of arrival); col. 3, lines 38-54; col. 10, lines 29-33; col. 19, line 56 - col. 20, line 2; col. 20, line 66 – col. 21, line 10 (determining propagation characteristics of said plurality of channels, wherein said channel propagation characteristics comprises the direction of arrival of a path of signal transmission and propagation delays experienced by said signal transmission). Furthermore, Dent teaches that the access code is chosen first to be that assigned to a mobile transmitter previously identified with the strongest

signal received at the base station; col. 8, lines 26-29; col. 4, lines 15-20; col. 10, lines 39-44 (assigning spreading codes to said plurality of wireless terminals based on said propagation characteristics of said channels)

Regarding claims 2, 19, 29 and 39, Dent discloses the access code is chosen first to be that assigned to a mobile transmitter previously identified with the strongest signal received at the base station; col. 8, lines 26-29; col. 4, lines 15-20 (choosing a target wireless terminal; and assigning a spreading code to said target wireless terminal)

Regarding claims 9, 26, 36 and 46, the base station in the system disclosed by Dent receives a plurality codes signals from the mobile phones to process received signals. It implies that the base station has to maintain a processing set of the plurality of mobile phones for processing. In addition, Dent's system uses CDMA technique, therefore, each mobile telephone is assigned a particular code for communication (individually assigning codes to said wireless terminals in said processing set). Furthermore, Dent discloses that a channel tracker determines which of the times-of-arrival combined with which directions-of-arrival contain the most energy and combines these signals using for example the aforementioned inventive RAKE combiner having quantized coefficients. When the largest value has been found, its value is returned to the channel tracker to update the coefficient in time for the next symbol period; fig. 4; col. 10, lines 15-50. After the largest value has been determined for a particular mobile phone, the system determines coded signals for another mobile phone (adding a wireless terminal to said processing set when said step of individually assigning codes

to said wireless terminals in said processing set has converged and repeating said step of individually assigning codes)

Regarding claims 10, 27, 37, and 47, the base station in the system disclosed by Dent inherently comprises the step of transmitting codes to the plurality of wireless terminals because Dent discloses that the communication between a mobile and a base station in the system based on CDMA technique.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 7, 12-14, 16, 20-22, 24, 30-32, 34, 40-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent, US Patent No 5,831,977, in view of Magnusson et al, US Patent No. 6,163,524, hereafter referred to as Dent and Magnusson respectively.

Regarding claims 3-5, 12-14, 20-22, 30-32 and 40-42, Dent discloses that the channel tracker determines which of the times-of-arrival combined with which directions-of-arrival contain the most energy and combines these signals using for example the aforementioned inventive RAKE combiner having quantized coefficients. When the largest value has been found, its value is returned to the channel tracker to update the coefficient in time for the next symbol period. The channel tracker will also determine whether that ray (each delayed version of the signal being called a "ray") shall be used

next time or whether another ray has become larger. Dent does not teach that the code is searched randomly. However, Magnusson discloses that the codes can be allocated randomly from the available eligible codes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt randomly search method disclosed by Magnusson into Dent's system in order to improve the quality of service because the best code signal is quickly detected. Since voice service is an interactive service, therefore, it requires a minimum time delay value during a service. Thus, the service is improved when the best code signal for assigning to the mobile phone is quickly detected.

Regarding claims 7, 16, 24, 34 and 44, Dent disclose that the best code signal is selected and assigned to a mobile phone based on time of arrival combined with direction of arrival. Therefore, it implies that Dent's system performs a gradient search of transmission delays for the improved code.

Claims 6, 8, 15, 17, 23, 25, 33, 35, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent, US Patent No 5,831,977, in view of Magnusson et al, US Patent No. 6,163,524 and further in view of Easton, US Patent No. 5,764,687 hereafter referred to as Dent, Magnusson and Easton respectively.

Regarding claims 6, 15, 23, 33 and 43, Dent teaches that the system performs a gradient search of code signal, but does not teach the search is performed in a space area surrounding improved code. However, Easton discloses a system, which searches all area of the signals by search windows (col. 11, line 54 – col. 12, line 2; col. 13, line 66 – col. 14, line 11). Therefore, the system disclosed by the Easton inherently

searches in the signal space area surrounding the improved code. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt the searching method disclosed by Easton into Dent's system for the same purpose as mentioned in claim 3.

Regarding claims 8, 17, 25, 35 and 45, claim 8 is combined limitations recited in claims 6-7. Claim 17 is combined limitations recited in claims 15-16. Claim 25 is combined limitations recited in claims 23-24. Claim 35 is combined limitations recited in claims 33-34. Claim 45 is combined limitations recited in claims 43-44. Claims 8, 17, 25, 35 and 45, therefore, are rejected based on rejected claims 6-7, 15-16, 23-24, 33-34, and 43-44 respectively.

Response to Arguments

Applicant's arguments with respect to claims 1-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The following references are cited to further show the state of the art with respect to the application:

US Patent No. 6,232,927 B1, Inoue et al. disclose an array antenna apparatus for use in spread spectrum communications with a particular interval between antenna elements.

US Patent No. 6,084,547 A, Sanderford et al. discloses an enhanced position calculation method.


US Patent No. 6,259,924 B1, Alexander, Jr. et al. disclose a method and system for comparing measured radio frequency signal propagation characteristics in a wireless communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai D Hoang whose telephone number is (703) 305-3232. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Thai Hoang


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 11/13/03